

2010 West Street

City of Annapolis, Maryland

WSSI #MD1096.02

Forest Stand Delineation Report

May 16, 2016

Prepared for:

Atapco Properties, Inc.

One South Street, Suite 2800

Baltimore, Maryland 21202

Prepared by:



Kenneth R. Wallis

5-16-16

Kenneth R. Wallis Date
(Qualified Professional per COMAR 08.19.06.01)

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1. INTRODUCTION

This report is prepared in accordance with the requirements outlined in the Maryland Department of Natural Resources' *State Forest Conservation Technical Manual*¹, as well as the City of Annapolis guidelines. According to the *State Forest Conservation Manual*, the purpose of a Forest Stand Delineation (FSD) is to determine the most suitable and practical areas for forest conservation during the preliminary design and review stages of development. The preparer of this report, Kenneth R. Wallis, is a qualified professional under COMAR 08.19.06.01, and this field study was conducted on March 11, 2015.

2. SITE LOCATION AND CONDITIONS

The 4.54-acre property, 2010 West Street (study area), is located fronting the north side of West Street (MD Route 450) in Anne Arundel County, MD (Figure 1). The property is bordered to the north, east and west by private land. No structures exist on the property and the property is primarily forested. The latitude and longitude of the property are N38° 58' 59" and W76°31'54", respectively. For the purposes of the Forest Stand Delineation, 3.84-acres qualify as forest for purposes of the Forest Stand Delineation (FSD).

3. SOILS

The U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS) has produced soil surveys for every county within the State of Maryland. The soil surveys map the locations of the various soil types throughout each county and provide a description of each soil type. The updated soil survey for Anne Arundel County that can be accessed on-line at <http://websoilsurvey.nrcs.usda.gov> revealed that four (4) soil types are mapped within the study area (Figure 2). One soil type has been classified as predominantly hydric by NRCS. The soil descriptions are listed in Table 1, along with the erodibility factors for each. Soils are considered highly erodible if the K-factor exceeds 0.35.

4. STEEP SLOPES

According to Section 17.04.830 of the City Code, a steep slope is defined as a slope of greater than 15 percent grade. Steep Slopes do exist on the site and are demarcated on the attached FSD Plan.

5. RARE, THREATENED & ENDANGERED SPECIES

A formal request for an environmental review of rare, threatened or endangered species was submitted to the Maryland Department of Natural Resources (DNR), Wildlife and Heritage Division. A copy of DNR's response letter, dated March 24, 2015, can be found in Appendix A of this report. No threatened or endangered species were observed during completion of the forest

¹ Maryland Department of Natural Resources. 1997. *State Forest Conservation Technical Manual - 3rd Edition*. Baltimore, Maryland.

stand delineation field studies.

6. WETLANDS, STREAMS & 100-YEAR FLOODPLAIN

The limits of jurisdictional waters of the U.S. (including wetlands) were delineated by Kenneth R. Wallis and Andie Murtha of Wetland Studies and Solutions, Inc. on March 11, 2015. An intermittent stream system was identified draining through the central portion of the. A restoration occurred in this stream as evidenced by the existence of constructed step pools and rip-rap. This stream system drains into Weems Creek, a tributary of the Severn River and there is no 100-year floodplain associated with this system.

7. METHODOLOGY

Forests are defined in the Forest Conservation Act (Nat. Res. Art. 5-1601) as a biological community dominated by trees and other woody plants covering a land area of 10,000 square feet or more, having a minimum density of at least 100 trees per acre with a minimum of 50% of those trees having diameters at least 2 inches at breast height. Forest also includes areas in which the trees have been cut but not cleared of their stumps.

Prior to conducting the field study, a base map was created by overlaying known environmental features (i.e. wetlands, streams, mapped soil types) and existing site conditions (i.e. tree-line, topography, structures) onto the map. The base map was then used to determine possible forest stand boundaries and to establish a sampling strategy for the site. The manual requires a minimum of one 1/10 acre sample plot per 4 acres of forest stand area; a minimum of two plots per forest stand; and a minimum of three plots for the total forested area of the site.

A Biltmore Stick was used to determine the size of trees generally less than 22-inches in diameter, while a 50-foot retractable D-tape was used to measure the larger trees. A Basal Area 10 Factor prism was used to collect information on tree densities at each sample point. For this study, three (3) data point locations were used to collect the required field data. Their locations are indicated on the FSD Plan and each data point was marked in the forest with red ribbon and numbered.

Data collected at each sampling point and noted on the attached Forest Stand Delineation Field Sampling Data Sheets included such information as basal area, percent canopy closure, percent invasive species cover, shrub and herbaceous species, and percent downed woody debris. In addition, any specimen trees (trees with diameters-at-breast height greater than 30 inches) or trees with diameters within 75% of a State Champion were also flagged and their locations are demarcated on the FSD Plan.

The information collected in the field was then used to calculate a structure value for each forest stand. The structure value places each forest stand in one of three categories: Poor, Good and Priority. This data aids in determining the overall value of each forest stand.

8. STAND DESCRIPTIONS

The forest stand delineation field study revealed that the existing forest on the site can be considered one (1) stand, based on age and/or species composition.

Stand A

Stand Composition and Structure

Stand A, which totals 3.84 acres, is an early successional, mixed-hardwood forest dominated by yellow poplar (*Liriodendron tulipifera*), white mulberry (*Morus alba*) and black cherry (*Prunus serotina*). This stand has an average DBH of 14 inches (Appendix B), and relatively dense shrub and herbaceous layers comprised of numerous invasive species including; Oriental bittersweet (*Celastrus orbiculatus*), Japanese honeysuckle (*Lonicera japonica*), sweet cherry (*Prunus avium*), privet (*Ligustrum vulgare*), English ivy (*Hedera helix*), and *Wisteria spp.* This stand contains approximately 41% invasive species cover likely due in part to past human disturbance. In addition to the relatively high percentage of invasive species cover, significant amounts of trash and other debris have been spread throughout much of the stand. The Forest Structure Analysis Sheet indicates that this stand has a structure value of 14, which puts it in the "Good" rating. However, Stand A contains extensive invasive plant cover, lacks maturity, and contains large amounts of refuse and therefore should be considered a low priority for retention.

Stand Condition

Stand A has reached the age where some structural diversity is occurring. The basal area of the stand is 130 and there are approximately 692 trees per acre. There is not much noteworthy about this stand with the exception of the high number of invasive plant species and the large amount of trash evenly scattered throughout. As a result this stand has low potential. There was no insect damage, fungal or disease problems detected within this stand.

Stand Function

The lack of structural diversity, coupled with its young age lends Stand A to be considered of lower value as wildlife habitat. Stand A provides some minor water quality protection, offers an aesthetic benefit as a forested area and, as it matures and diversifies, may offer the potential for passive recreation. While Stand A does provide a buffering function to surface runoff and also provides some nutrient uptake functions it should still be considered a low priority for retention.

TABLE 1: MAPPED SOIL TYPES				
Map Unit	Soil Description	K-factor (whole soil)	Hydric Rating	Drainage Class
AuB	Annapolis-Urban land complex, 0-5% slopes	0.24	Non-hydric	Well
AuD	Annapolis-Urban land complex, 5-15% slopes	0.24	Non-hydric	Well
DuB	Donlonton-Urban land complex, 0-5% slopes	0.24	1-32% Hydric	Moderately Well
Uz	Urban land	--	--	--

Source: <http://websoilsurvey.nrcs.usda.gov> (March, 2015)

TABLE: SPECIMEN TREE TABLE					
No.	Common Name	Scientific Name	DBH (inches)	Condition	Comments
1	American sycamore	<i>Platanus occidentalis</i>	38	Poor	crown dieback, exposed roots, crooked bole, dead branches
2	American sycamore	<i>Platanus occidentalis</i>	32	Poor	witches brooming, heavy vine cover, cavities, crown dieback, decay, flaking bark on trunk base
3	yellow-poplar	<i>Liriodendron tulipifera</i>	37	Poor	co-dominant leader, included bark, poor form, decay at inclusion, adventitious shoots at base, heavy vine cover
4	box-elder	<i>Acer negundo</i>	36	Poor	visible rot at trunk base, adventitious sprouts, poor form, excessive cavity decay, crown dieback
5	black locust	<i>Robinia pseudoacacia</i>	31	Poor	co-dominant leader fallen, vine cover, adventitious shoots, large cavity in trunk, conks

* - Tree located offsite size and condition estimated

TABLE 3: SIGNIFICANT TREE TABLE (24-29.9")

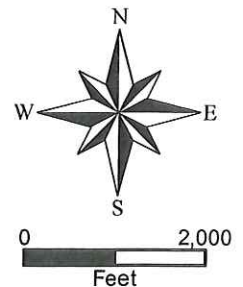
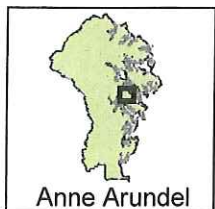
No.	Common Name	Scientific Name	DBH (inches)	Condition	Comments
1	black walnut	<i>Juglans nigra</i>	25	Poor	dead scaffold branches, heavy vine cover, rot at branch attachment
2	white mulberry	<i>Morus alba</i>	29	Fair	poor form, co-dominant leaders growing together, power lines running through crown, poor pruning, twisted competing leader
3	red maple	<i>Acer rubrum</i>	29	Poor	co-dominant leader, one leader dead at top, visible decay in both leaders
4	black locust	<i>Robinia pseudoacacia</i>	27	Poor	co-dominant leader at 5', broken scaffold branches, crown dieback, large cavity in crotch with rot
5	yellow-poplar	<i>Liriodendron tulipifera</i>	26	Good	crown dieback
6	yellow-poplar	<i>Liriodendron tulipifera</i>	25	Fair	vine cover, swollen trunk base

* - Tree located offsite size and condition estimated






Data Source: ESRI

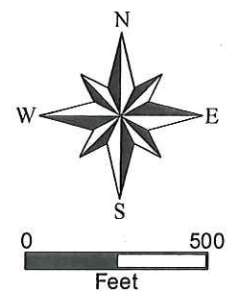
Vicinity Map
2010 West Street
Original Scale: 1" = 2000'





Soils Map
SSURGO Digital Data
2010 West Street
Original Scale: 1" = 500'

-  Hydric Soils
-  Soils with Hydric Inclusions
-  Non-hydric Soils



APPENDIX A



Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor
Mark J. Belton, Secretary
Frank W. Dawson, III, Deputy Secretary

March 24, 2015

Andie Murtha
Wetland Studies
8373 Piney Orchard Parkway, Suite 207
Odenton, MD 21113

RE: Environmental Review for 2010 West St., Annapolis, 4.78 acres, Anne Arundel County, MD.

Dear Mr. Murtha:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2015.0343.aa

APPENDIX B

FOREST STAND SUMMARY									
Forest Stand:	A		% Dominance By Species For Stand A						
Acreage:	3.84		Species	# Tallied	% Dominance				
Data Points/Stand:	3		white oak	1	3%				
Average DBH:	14		box-elder	2	5%				
Number of Trees/Acre:	692		willow oak	1	3%				
Number of Tree Species:	10		black cherry	4	10%				
Basal Area/Acre:	130		sweetgum	1	3%				
Number of Dead Trees/Acre:	24		sweet cherry	3	8%				
Number of Shrubs per Acre:	267		white mulberry	10	26%				
% Canopy Cover:	40		white ash	1	3%				
% Herbaceous Cover:	40		black walnut	1	3%				
% Downed Woody Material:	8		yellow-poplar	15	38%				
% Exotic or Invasive Species:	41		Total	39	100%				
FOREST STRUCTURE ANALYSIS									
(As an average per acre for the stand)									
Stand Designation	A		Structure Value		14				
The following parameters comprise an average of data collected at each point for the stand indicated above. The parameters, when combined, give a general representation of the condition and value of the stand.									
The total structure value is defined by:									
15-21 Priority									
7-14 Good									
0-6 Poor									
Percent Canopy Closure			Size Class of Dominant Trees						
70-100%	0		Greater than 20"		0				
40-69%	2		6-19.9"		2				
10-39%	0		3-5.9"		0				
0-9%	0		Less than 3"		0				
J			J						
Number of Shrubs per Acre			Percent Herbaceous Cover						
600 or more	0		75-100%		0				
400-599	0		25-74%		2				
200-399	1		5-24%		0				
0-199	0		0-4%		0				
J			J						
Percent Woody Debris			# of Tree Species >=6"						
15-100%	0		6 or more		3				
5-14%	2		4-5		0				
1-4%	0		2-3		0				
Less than 1%	0		0-1		0				
J			J						
# Standing Snags per Acre									
30 or more	0								
20-29	2								
10-19	0								
0-9	0								

Forest Stand Delineation
Field Sampling Data Sheet

Property: 2010 KEST ST

Prepared by: K. Wallis / AMURTA

Stand: A

Sample Point: A

Date: 3/11/15

Species	Tallied DBH	Diameter of dead trees ≥6" DBH tallied at sample point	
Yellow - poplar	18, 22, 19, 19, 18		0
SWEET CHERRY	23, 19	Percent canopy cover at sample point	30
		Percent herbaceous cover at 1/100th acre plot	40
		Percent downed woody debris ≥6" diameter at 1/10th acre plot	8
		Percent invasive plant cover at 1/100th acre plot	35
		Number of shrubs per 1/100th acre plot	0

Invasive Species:

Glaucina, Hedera Helix, Wisteria, Lonicera Japonica

Common Understory Species (3'-20') layer:

Wisteria, Tree, Vitis

Herbaceous Species (0-3' layer):

Stellaria media, Gaultheria, H. Helix, Wisteria, Lonicera jap.
Smilax rotundifolia

Comments:

lots of Vine cover

(1/100th acre plot = 11.78' radius circle)

(1/10th acre plot = 37.24' radius circle)

Forest Stand Delineation Field Sampling Data Sheet

Property: 2010 West Street Prepared by: K. Wallis

Stand: A Sample Point: B Date: 3-11-15

Species	Tallied DBH	Diameter of dead trees ≥6" DBH tallied at sample point	
White mulberry	22, 2, 5, 13, 7, 9, 9, 9, 8, 7, 13		-
White ash	13	Percent canopy cover at sample point	80
box elder	22		
Black walnut	17	Percent herbaceous cover at 1/100th acre plot	70
		Percent downed woody debris ≥6" diameter at 1/10th acre plot	10
		Percent invasive plant cover at 1/100th acre plot	80
		Number of shrubs per 1/100th acre plot	7

Invasive Species:
Rosa multiflora *Glechoma hederacea* *Albizia julibrissin*
Lonicera japonica *Duchesnea indica*

Common Understory Species (3'-20') layer:
Rosa multiflora

Herbaceous Species (0-3' layer):
Carex sp. *Lonicera japonica* *Albizia julibrissin*
Smilax rotundifolia *Duchesnea indica*
Glechoma hederacea

Comments:

(1/100th acre plot = 11.78' radius circle)

(1/10th acre plot = 37.24' radius circle)

Forest Stand Delineation
Field Sampling Data Sheet

Property: 2010 West Street Prepared by: K. Wallis

Stand: A Sample Point: C Date: 3-11-15

Species	Tallied DBH	Diameter of dead trees ≥6" DBH tallied at sample point	11, 10
Yellow poplar	19, 14, 19, 26, 23, 23, 19, 23, 17		7
White oak	2	Percent canopy cover at sample point	10
Box elder	3		
Willow oak	15	Percent herbaceous cover at 1/100th acre plot	10
Black cherry	10, 8, 11, 8		
Sweet gum	18	Percent downed woody debris ≥6" diameter at 1/10th acre plot	5
Sweet cherry	8		
		Percent invasive plant cover at 1/100th acre plot	7
		Number of shrubs per 1/100th acre plot	1

Invasive Species:

Ligustrum vulgare
Prunus avium

Lonicera japonica
Hedera helix

Celastrus orbiculatus

Common Understory Species (3'-20') layer:

Ilex opaca

Herbaceous Species (0-3' layer):

Allium canadense
Saxifraga rotundifolia

Ligustrum vulgare
Lonicera japonica
Hedera helix

Celastrus orbiculatus

Comments:

(1/100th acre plot = 11.78' radius circle)

(1/10th acre plot = 37.24' radius circle)